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THE EXTENT OF UNEMPLOYMENT IN THE UNITED STATES.

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A discussion of unemployment necessarily relates only to those persons who are normally engaged in what the census describes as "gainful occupations." The literature on unemployment abounds in attempts, some fortunate, but more calamitous, to accurately limit the field to which the term "unemployed" should apply; but for the purpose of this paper no subtle distinctions will be drawn, nor will any attempt be made to define "unemployed" further than to say that those who are normally engaged in gainful occupations, and who for any reason are temporarily not so engaged, are unemployed. This broad construction of the term is justifiable in view of the fact that such a definition of unemployed forms the basis upon which the available statistics have been gathered.

What is the extent of unemployment in the United States? Much has been spoken and written on this theme; but, so far as the writer has been able to discover, no careful attempt has heretofore been made to compile the available facts and furnish a definite answer to the question. Most of the articles on the subject discuss the causes and effects of unemployment and analyze its remedies; some articles deal with specific cases; but the facts, so far as they exist, are referred to piece-meal or not at all.

This article represents an attempt to present, in a connected manner, the various available figures showing the extent of unemployment. While the writer has sought to point out certain relations between the groups of figures, the broad deductions and generalizations to which they may lend themselves are reserved for other papers and other writers.

The Massachusetts figures are the only available general statistics of unemployment before 1900. They were collected with the data for the Massachusetts censuses of 1885 and 1895, and they cover the regular occupations of those gainfully employed, as well as special or secondary occupations, to which the unemployed may have turned during periods of temporary idleness.

Table I presents a group of Massachusetts figures. The most surprising thing shown by the table is the lengthy period of idleness reported for those unemployed during 1885. For the state at large the average period of idleness is four months. In the individual towns it is slightly less. Equally remarkable is the high percentage of unemployment, which is nearly 30 per cent. for the state at large and twice as much for Fall River, the town showing the highest percentage.

TABLE I.—UNEMPLOYMENT IN MASSACHUSETTS.

Authority.	Date of Figures.	Territory Covered.	Occupations Included.	Total Employees.	Per Cent. Idle.	Average Length of Time Idle.
Mass. Bureau of Labor Statistics,	1885	Massachusetts	All	816,470	29.59	4.11 months
" " " " "	"	Fall River	All	26,220	56.38	3.49 "
" " " " "	"	Lynn	All	21,305	43.13	3.88 "
" " " " "	"	Lowell	All	31,624	33.71	3.61 "
" " " " "	"	Boston	All	169,885	18.40	4.38 "
Massachusetts Census, 1895 .	1894	Massachusetts	All	925,781	27.27	—
" " " " .	"	Fall River	All	39,856	62.6	—
" " " " .	"	Lynn	All	25,064	30.6	—
" " " " .	"	Lowell	All	37,459	28.3	—
" " " " .	"	Boston	All	193,447	18.2	—

These early figures are valuable, not because of their intrinsic worth, but because they throw the later figures into perspective. They show that unemployment is by no means a new phenom-

enon, as in 1885 it was already an important factor in the typically industrial state of Massachusetts and was particularly noticeable in the industrial towns.

Unemployment since 1900 forms a topic that lends itself to discussion, because since that date considerable material has been collected which bears directly on the problem. In order to present the subject fairly the sources of the material will first be described, and then the material itself will be analyzed.

There are five principal sources of material on unemployment since 1900.

I. The United States Census of 1900 (volume on Occupations) deals at some length with "Unemployment." In 1880 questions on unemployment were asked by census takers, but the answers were not compiled because of lack of funds. The census of 1890 discusses "Unemployment," but very inadequately. In 1900 an attempt was made to treat the question thoroughly. Even in 1900 the figures are regarded as unsatisfactory by the compilers of the census and are described as representing tendencies rather than definite conclusions.

The figures of the census of 1900 are defective in that they do not give the average duration of unemployment for the various trades, but for this purpose classify the unemployed according to the duration of their unemployment. Thus among 5,227,472 males unemployed in all occupations in 1900:—

49.6 per cent. were unemployed 1–3 months.
39.6 per cent. were unemployed 4–6 months.
10.8 per cent. were unemployed 7–12 months.

In short, half of the unemployment is for less than 25 per cent. of the working time, and half of it for more than 25 per cent. of the working time. Thus nearly three millions of working men and boys were unemployed in 1900 for more than one-quarter of the full working time. The census does classify the unemployed by color, nativity, sex, trade, occupation, and state and territory of residence.

II. The Twenty-fourth Annual Report of the United States Commissioner of Labor (1903) is more restricted in scope, but more authoritative in result, than the census. It includes 25,440 families of whose lives a special investigation was made. This investigation was made by experts, while that of the census was made by persons wholly untrained in social investigations. The returns from this work of the Bureau of Labor can therefore be regarded as much more reliable than the census returns.

The 25,440 families selected by the Commissioner of Labor were representative of those gainfully employed in all parts of the country and in all types of employment, and the intensive character of the study makes certain a result of considerable value. The report of the Commissioner does not go into such analytical detail as does the United States Census. The unemployed are classified according to nativity, color, and length of time unemployed; but no attempt is made to classify them by industries.

III. The reports of the New York Bureau of Labor Statistics furnish the most thoroughly compiled, the most ably presented, and the most up-to-date unemployment material available. The Bureau receives reports from the secretaries of as many labor unions as are willing to make the returns, and it is thus enabled to publish, four times a year, a group of facts regarding the employment of about 400,000 labor union members in New York State. The material secured from the labor unions is thoroughly analyzed, and the unemployed are classified by trades, causes of unemployment, months and years unemployed.

The New York figures, coming as they do from union men alone, are not entirely comparable with the census and other figures that are collected irrespective of union membership. There has been considerable discussion as to whether union figures should show a greater or less percentage of unemployment than general figures. On the one hand, it is contended that the unions consist almost exclusively of the skilled workers, who are employed with much greater regularity than the unskilled workers. On the other hand, it is held that many of

the unionized skilled trades, such as glass blowing and building construction, are distinctly seasonal trades, and therefore show a high proportion of unemployment. Then the strikes and stoppages, due to union influence, are responsible for much unemployment. The figures presented in this paper do not furnish any adequate basis for a conclusion as to whether union or non-union workers show the higher percentage of unemployment. All that can be said is that the New York figures cannot be used as strictly corroborative of the figures from other sources.

To make the comparison still more difficult, there is a slight difference in the methods of statement between the New York figures and the United States Census and Commissioner of Labor figures. The New York figures state average unemployment for the year. Thus, if January shows 20 per cent. unemployment and July 10 per cent., the New York method of figuring the unemployment for the year would be to add the 20 per cent. and the 10 per cent. and divide by 2, giving an average unemployment for the year of 15 per cent. In the cases of the Census and the Commissioner's report, however, the unemployment is the total for the year, not the average. Thus in the above illustration, if 20 men in a hundred were unemployed in January and 10 men in a hundred in July, and if the 20 men and the 10 men formed different groups, no member of the group of 20 belonging also to the group of 10, the unemployment would be 30 per cent. for the year. The difference in these two statements is caused by the fact that the New York figures are compiled from the labor union returns,—the question asked is, "What per cent. of your men are unemployed?"—while the census and Commissioner of Labor figures are compiled from individual investigation,—the question asked is, "Were you unemployed?" The resulting difference is apparent. Aside from these slight differences in method the two groups of figures are fairly comparable. It will be noticed, in the succeeding tables, that the percentage of unemployment given by the various authorities is very similar for similar industries and geographical locations.

IV. The United States Geological Survey issues an annual report in which there is a statement of the number of work days and idle days in the coal-mining industry of the United States.

V. The Illinois (annual) Coal Report contains similar material for Illinois. In addition, detailed figures are given for the individual mines. These coal-mine figures give the unemployment not of men but of an industry, and they, therefore, indicate the probable number of days that a miner can go to work if he wishes to, but they do not, like the other figures dealing with unemployment, take into consideration sickness, accident, or any other cause that might keep a man from working. They represent opportunity to work and not work actually performed.

These five authorities, taken as a whole, are by no means satisfactory, but they represent the total available resources of one who seeks to learn the extent of unemployment in the United States, and an attempt will now be made to analyze and compare them. Unemployment in 1900 is shown in Table II. Four of the five authorities cited contribute to this group of figures, but the census figures do not give the length of time unemployed, as was explained in a previous paragraph. It will be noted from the table that unemployment is most severe among the miners. The Census shows that nearly half of them were unemployed at some time during the year, while the figures from Illinois show 126 idle days, and those from the United States Geological Survey show 96 idle days, out of a possible 306 working days,—in each case about a third of the maximum days during which employment is possible. In the lower part of the table a contrast is presented between the census figures and the New York Bureau figures in three specific industries,—printing, tobacco work, and textile work. The census figures cover a much larger number of employees than the New York figures, and in the first two industries show a much higher percentage of unemployment. As previously explained, however, this should be the case because of a difference in method of compilation. When the difference in method is taken into

account, it will appear that the census figures and the New York figures correspond very closely.

Table II shows that, excepting the miners, about one-quarter of those gainfully occupied during 1900 were unemployed. This conclusion is borne out by the census and the New York figures, which show unemployment in "Industry" to the extent of 27 per cent. and 20 per cent. respectively.

The 1902 unemployment figures are presented in order to bring out the relation of the United States Commissioner's report of 1903 to the general problem. This report, as already indicated, is entitled to great consideration, owing to the intensive method of the investigation underlying it. It will be noted that the New York Bureau figures and the coal-mine figures in Table III are almost identical with the same figures in Table II. From this it might fairly be inferred that unemployment was about as extensive in 1902 as in 1900. In view of this stability of unemployment in two cases where comparison is possible and in view of the careful manner in which the United States Commissioner's report was compiled, the unemployment of half of the heads of families coming under the United States Commissioner's investigation is most startling.

TABLE II.—UNEMPLOYMENT IN 1900.

Authority.	Date of Figures.	Territory Covered.	Occupations Included.	Union Members Only?	Total Employees.	Per Cent Idle.	Average Number Days Idle.
United States Census, 1900	1900	United States	All	No	29,073,233	22.3	—
" " " "	"	United States	Manufacturing and Mechanical Pursuits	No	7,085,309	27.2	—
" " " "	"	New York	Manufacturing and Mechanical Pursuits	No	260,821	25.2	—
" " " "	"	New York	Trade and Transportation	No	65,388	8.7	—
New York Bureau Labor Statistics, 24th Annual Report	"	New York	Industry	Yes	230,000	20	62
United States Census, 1900	"	United States	Miners	No	562,417	44.3	—
United States Geological Survey, 1906	"	United States	Coal Mining	No	448,581	—	96
Illinois Coal Report, 1907	"	Illinois	Coal Mining	No	39,384	—	126
United States Census, 1900	"	United States	Printers	No	139,166	15	—
18th Report New York Bureau	"	New York	Printers	Yes	16,983	8	38
United States Census, 1900	"	United States	Tobacco Workers	No	87,955	27.2	—
18th Report New York Bureau	"	New York	Tobacco Workers	Yes	11,850	19	22
United States Census, 1900	"	United States	Clothing and Textiles	No	489,000	23.8	—
18th Report New York Bureau	"	New York	Clothing and Textiles	Yes	31,374	31	60

TABLE III.—UNEMPLOYMENT IN 1902.

Authority.	Date of Figures.	Territory Covered.	Occupations Included.	Union Members Only?	Total Employees.	Per Cent. Idle.	Average Number Days Idle.
18th Annual Report United States Commissioner of Labor	1902	United States	All,—largely Industry	No	24,402	49.81	56½
18th Annual Report United States Commissioner of Labor	1902	New York	All,—largely Industry	No	4,270	56.18	60
New York Bureau Labor Statistics, 24th Report	1902	" "	Industry	Yes	300,000	14.3	54
" " " " " " "	1902	" "	Building Trades	Yes	90,817	18.1	—
" " " " " " "	1902	" "	Clothing and Textiles	Yes	46,954	22.5	—
United States Geological Survey, 1906	1902	United States	Coal Mining	No	518,197	—	111
Illinois Coal Report, 1907	1902	Illinois	Coal Mining	No	46,005	—	128
18th Report United States Commissioner of Labor	1902	Pennsylvania	All,—largely Industry	No	3,530	57.31	59
18th Report United States Commissioner of Labor	1902	Illinois	All,—largely Industry	No	1,604	46.76	69

The United States Commissioner's figures are much higher than the New York Bureau's, showing more than one-half of the heads of families unemployed as compared with 25 per cent. of unemployment in New York. This disparity in returns results from three things: (*a*) the United States figures include workers in general, the New York figures union members only; (*b*) the United States figures show total unemployment, the New York figures average unemployment; (*c*) most of the families studied by the Commissioner had an annual income of less than $1,000, and a large proportion had an income under $750. It is generally supposed that unemployment is most prevalent among the lowest paid, and these figures would seem to bear out the supposition.

From the carefully worked out Commissioner's figures it is apparent that among the average group of workers earning less than $750 the possibilities are that in a normal year one man in every two will be unemployed, and that the unemployment will average 60 days, or one-fifth of the total working time. In a normal year the average wage-earner under $750, therefore, has one chance in two of losing one-fifth of the working time.

The figures presented for 1900 and 1902 indicate conditions of employment in years of prosperity. More figures were available in 1900 and 1902 than for any other two years, and thus these years were selected for discussion. The figures compiled show that in two prosperous years, in all industries, there is a considerable amount of unemployment. The latest figures, those for 1908, are taken in a year of marked business depression. They are not, therefore, typical, as they represent unemployment in a period of adversity, while the figures for 1900 and 1902 represent unemployment in periods of prosperity.

The figures for 1908 are given in Table IV. Unfortunately no other adequate figures are procurable than those furnished by the New York Bureau of Labor Statistics for the end of March and September of that year.

It will be noted that the March figures show an unemployment in the building trades of 56 per cent., while for all trades the average is 37 per cent. The surprising nature of the Septem-

ber figures will be recognized when it is remembered that the average unemployment for September is ordinarily from 5 per cent. to 6 per cent. The average for September, 1908, is 22.5 per cent. with a maximum of 33.5 per cent. in the building trades. Other trades which ordinarily show a relatively low employment have climbed, in 1908, to a percentage of 20, while two of the trades, even in September, which is a month of great activity, have touched a percentage of 30.

TABLE IV.—UNEMPLOYMENT, NEW YORK STATE,* 1908.

Authority.	Date of Figures.	Occupations Included.	Total Employees.	Per Cent. Idle.
Bulletin 37	End of March	Industry	261,465	35.7
" "	" " "	Building Trades	66,188	56.0
" "	" " "	Clothing and Textiles	23,179	46.7
" "	" " "	Printing	21,719	17.9
" "	" " "	Tobacco Workers	7,212	25.8
" "	" " "	Wood Workers	7,867	31.1
" 39	" " September	Industry	288,181	22.5
" "	" " "	Building Trades	88,009	33.5
" "	" " "	Clothing Trades	22,829	30.4
" "	" " "	Printing	21,547	12.7
" "	" " "	Tobacco Workers	8,250	14.2
" "	" " "	Wood Workers	7,843	21.1

* New York Bureau Labor Statistics, Bulletins 37 and 39.

Tables V and VI show the unemployment in two industries where the greatest amount of data is procurable. These data have been used in the previous tables, but are presented here to show the extent of conformity between the authorities for two specific industries. Both industries have dull and active seasons, and they, therefore, show a higher percentage of unemployment than a non-seasonal industry like printing. It is interesting to note that in both cases the authorities agree closely about the amount of unemployment from year to year. The miner is idle about one-third and the builder about one-fifth of the working days in an ordinary year. The census non-union figures show the total unemployment among certain of the building trades which are unusually seasonal to

TABLE V.—UNEMPLOYMENT IN THE BUILDING TRADES.

Authority.	Date of Figures.	Territory Covered.	Occupations Included.	Union Members Only?	Total Employees.	Per Cent. Idle.	Average Number Days Idle.
24th Report, New York Bureau Labor Statistics,	1897	New York	Building Trades	Yes	47,000	—	75
" " " " " " "	1900	New York	Building Trades	Yes	77,344	24	76
" " " " " " "	1905	New York	Building Trades	Yes	127,000	15.3	66
United States Census, 1900	1900	United States	Plasterers	No	35,649	56.1	—
" " " "	1900	United States	Masons	No	160,638	55.5	—
" " " "	1900	United States	Carpenters	No	599,707	41.4	—
Bulletin 37, New York Bureau Labor Statistics .	End March, 1908	New York	Building Trades	Yes	66,188	56	—
Bulletin 39, New York Bureau Labor Statistics .	End Sept., 1908	New York	Building Trades	Yes	88,009	33.5	—

TABLE VI.—UNEMPLOYMENT AMONG MINERS.

Authority.	Date of Figures.	Territory Covered.	Occupations Included.	Union Members Only?	Total Employees.	Per Cent. Idle.	Average Number Days Idle.
United States Census, 1900	1900	United States	Miners	No	562,417	44.3	—
United States Geological Survey, 1906	1895	United States	Miners	No	382,879	—	113
" " " " "	1900	United States	Miners	No	448,581	—	96
" " " " "	1905	United States	Miners	No	626,035	—	96
Illinois Coal Report, 1907	1895	Illinois	Miners	No	38,630	—	125
" " " "	1900	Illinois	Miners	No	39,384	—	125
" " " "	1905	Illinois	Miners	No	59,230	—	134

be 50 per cent., while the New York union figures show the average unemployment for all building trades to be 20 per cent.

The New York figures will also be given in a way that will show the unemployment in the various trades. "Average" figures convey a good general impression, but they cannot show the real burden of unemployment. An unemployment of 30 per cent. in clothing and 10 per cent. in printing give an average of 20 per cent. of unemployment. This, however, does not in the least degree relieve the burden on the clothing trade. There unemployment is still 30 per cent., although the average is shown to be 20 per cent. If the printers with a low percentage helped to pay the bills of the clothing workers with a high percentage, "average unemployment" would mean something. As, however, each man must stand on his own feet, 30 per cent. unemployment among the clothing trades is for them as serious a matter as if the printers likewise had 30 per cent. The low unemployment in one group does not relieve high unemployment in another group. As average figures are so inadequate, though in most cases necessary, it becomes a matter of considerable moment if the figures for the individual trades can be presented. Selecting a group of trades as compiled in the New York returns, —stationary engines; theatres and music; public employment; food and liquors; restaurants; printing and binding; transportation; tobacco; wood working; metals, machinery, etc.; clothing, textiles; and building trades,—it will be found that there is a marked difference in unemployment between the first three and the last two. Among the first three, unemployment averages from 8 to 10 per cent; among the last two, from 45 to 55 per cent. Six of the trades show an unemployment of less than 25 per cent., while six show more than 25 per cent. The trades showing the greatest unemployment are seasonal (clothing and building); but metals and machinery, wood working and tobacco working, are not seasonal, yet even here the percentage is high. The variation between trades is so marked as to warrant the statement that "average unemployment" gives little idea of the real conditions of unemployment.

TABLE VII.—TOTAL DAYS IDLE: COAL MINES.

Date of Figures.	United States Bituminous.	Pennsylvania Anthracite.	Ohio.	West Virginia.	Alabama.
1890	80	106	—	—	—
1891	83	103	—	—	—
1892	87	108	—	—	—
1893	102	109	—	—	—
1894	135	116	—	—	—
1895	112	110	—	—	—
1896	114	132	—	—	—
1897	110	156	—	—	—
1898	95	154	—	—	—
1899	72	133	—	—	—
1900	72	140	—	—	—
1901	81	110	—	—	—
1902	76	190	—	—	—
1903	81	100	112	96	78
1904	104	106	131	109	90
1905	95	91	130	97	81
1906	93	111	139	86	69
1907	72	86	107	76	64

The figures of unemployment relating to a series of years are procurable from the coal-mine reports and from the reports of the New York Bureau of Labor Statistics. The coal-mine figures are the most extensive, and clearly show the variations in unemployment which occur in the coal-mining industry from year to year. Table VII gives the number of idle days in the mines of the leading coal-producing states and for the country at large. It will be observed that the average number of days of idleness in the anthracite coal mines is 100 per year, while in the bituminous mines it is only about 75 per year. There is, however, considerable variation from year to year. Thus in the anthracite field the range is from 86 in 1907 to 190 in 1902, and in the bituminous field from 72 in 1907 to 135 in 1894. For Ohio, West Virginia, and Alabama the figures go back only to 1903, and are therefore not so satisfactory as the other figures. Nevertheless, they show the same tendency to vary from year to year, although the variation is not so great. In all the figures that extend back so far, the hard years of 1893 and 1897 show clearly the effect of the bad times in the large per-

centage of idleness. Accepting these figures as indicative of general conditions, a coal miner may expect unemployment in every year equivalent to one-fourth or one-third of his working time, and in years of unusual depression unemployment equivalent to five-twelfths to one-half of his total working time.

The New York figures are more significant because they are procurable for the entire year, as well as for two definite periods in the year, March and September. These latter figures are the latest procurable (1908). A comparison of the annual average unemployment in New York State for the years from 1897 to 1906 shows a gradual decrease in the extent of unemployment from 26 per cent. in 1897 to 9 per cent. in 1906, with slight variations above and below the average in some of the years. The unemployment at the end of March, however, which is procurable up to March, 1908, shows a higher percentage of unemployment for March 31, 1908, than in any previous year since the figures were first compiled, unemployment in 1908 being almost 36 per cent., while in 1897, the highest previous record, it was but 30 per cent. The same thing is true of September, that month in 1908 showing 22 per cent. of unemployment as against 13 per cent., the highest previous record, which was attained in 1897, 1898, and 1900.

It is therefore fair to conclude that for the unionized trades of New York State, for the coal industry of the United States, and, by inference, for the general industries of the United States, the following points hold true:—

A. Unemployment is always a factor in modern industry.

B. The average miner can work, from year to year, about two-thirds of the time.

C. In other industries the average unemployment from year to year is about one-fifth.

D. In some years the unemployment is several times more severe than in others.

E. 1908 was a year of unusually severe unemployment.

Figures for different portions of the same year are likewise available in the Illinois coal reports and the reports of the

New York Bureau. The Illinois Coal Report relates to coal mines only, and merely gives the percentage of the total coal output which was produced in the different months. These figures do not, therefore, definitely show unemployment, but by inference they show that a greater or less number of days were worked in given months. It is evident that a much greater amount of coal is used in the winter than in the summer months. In Illinois 60 per cent. more coal is mined in January than in July. It is fair to conclude that unemployment is higher in the summer months than in the winter months. There is thus a regular variation from month to month so that a miner may count definitely on a higher proportion of unemployment in the summer than in the winter.

The New York figures are definite and conclusive. They cover accurately nearly 400,000 union men in one state, and they are carefully analyzed by trades.

Figures for the state at large, for seasonal trades (building and clothing), and for one regular trade (printing) are given in Table VIII.

TABLE VIII.—PERCENTAGE OF UNEMPLOYMENT IN NEW YORK IN VARIOUS MONTHS,* 1902 AND 1906.

Months.	All Trades.		Building Trades.		Clothing Trade.		Printing.	
	1902.	1906.	1902.	1906.	1902.	1906.	1902.	1906.
January	20.9	15.0	33.6	14.3	19.2	8.1	12.2	19.6
February	18.7	15.3	34.3	16.4	5.4	12.5	12.9	18.9
March	17.3	11.6	23.5	9.4	21.4	10.2	14.7	18.1
April	15.3	7.3	19.1	6.7	27.6	9.4	13.2	17.0
May	14.0	7.0	13.3	7.6	29.1	10.4	9.2	16.9
June	14.5	6.3	14.1	6.4	28.3	5.3	12.9	16.3
July	15.6	7.6	12.9	10.8	34.3	5.2	13.6	15.8
August	7.1	5.8	7.6	6.9	3.9	3.5	12.8	15.7
September	6.3	6.3	5.1	6.4	6.6	8.0	12.3	15.5
October	11.2	6.9	14.2	7.3	18.1	9.4	10.9	15.8
November	14.3	7.6	13.4	10.2	36.9	8.4	11.0	14.4
December	22.2	15.4	25.6	19.2	39.5	11.5	12.6	13.2

* Twenty-fourth Annual Report New York Bureau Labor Statistics.

For all trades the amount of unemployment in August and September is very low, while for December and January it is two or three times as extensive. This is even more strikingly true of the building trades which are largely dependent upon weather conditions. Both of these instances are the reverse of conditions in the mining industry, where the greatest activity occurs during the winter. The clothing trades show similar contrasts between activity and inactivity; but their activity comes in two periods each year instead of in one period, as is the case in most seasonal trades. The contrast between these seasonal trades, with their marked variation from month to month, and the printing trade, with its marked stability throughout the year, is striking.

From these facts may be drawn several conclusions regarding the variations in unemployment from one part of the year to another.

A. Unemployment in some trades is several times as great in winter as it is in summer.

B. Unemployment is far less common in summer than in winter. (Coal mining, theatres, and clothing work form an exception to this rule.)

C. Some trades in ordinarily prosperous years show an average unemployment of more than 30 per cent. during the winter months.

From the foregoing figures certain conclusions may be drawn regarding the average extent of unemployment.

From occupation to occupation there is considerable variation in unemployment. While unemployment is a factor common to all occupations, there are some, such as coal mining, building, and clothing work, in which unemployment plays a far more important part than it does in others, such as printing. And, while averages mean very little, the average wage-earner in an average year may look forward to one chance in four or five of being unemployed.

There is also considerable change in unemployment from year to year. The New York statistics and the mine statistics are the only ones that furnish data on unemployment over a series

of years. From these it is clear that the average for prosperous times is no index of conditions over a long period of years. While unemployment fluctuates somewhat from year to year, these fluctuations are slight compared with the all-prevalent unemployment of years of depression. In a year of depression in some occupations more than half of the workers are unemployed at one time, and a canvass of total unemployment for the entire year would doubtless run the figure up to 65 per cent. or even to 75 per cent. in these occupations.

Unemployment also varies from season to season. There are certain trades that are seasonal in their nature. They may depend upon the weather, like the building trades, or they may be regulated by trade demands, like the clothing trade, with its spring and fall styles. In these trades the probabilities of unemployment during some period of the year are always high, even in the most prosperous years, while in years of depression the trades are practically submerged at the dull season, unemployment being the rule rather than the exception.

Briefly summarized, it may be said that unemployment is inseparable from the present system of industry: (1) industrial depressions mean extensive unemployment; (2) certain trades are subject to violent fluctuations of demand which result in unemployment; (3) other trades depend on the weather, and, therefore, result in unemployment.

Individual incapacity in the form of sickness, accident, inefficiency, or some other purely personal factor also means unemployment. Taken together, these two things, industrial uncertainty and personal incapacity, make unemployment a constant factor in the life of the average wage-worker.

CALIFORNIA VITAL STATISTICS.

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For the first time in the history of the State, California possesses vital statistics of real utility.* This result has been achieved only after a series of more or less fruitless experiments, covering a period of nearly fifty years, and bearing a marked resemblance, in some details and in general maladroitness, to the registration experiments of a number of other States. For this reason, rather than for any unique features, California's experience may be worth relating.†

Accurate death records would have been of more than ordinary utility for legal purposes in the early years of California's statehood, for the lack of known antecedents in the case of many of the early fortune-seekers frequently led to difficulties in the settlement of estates.‡ Taking advantage of this situation, an enterprising journalist succeeded in getting a registration law enacted in 1858,§ and was appointed State Registrar. Marriages were to be reported by those performing them, births by parents, divorces by those obtaining them, and deaths by sextons. In each case a fee of fifty cents was to accompany the report, which was to be made to the County Recorder. One-third of the income from fees was to be retained by the recorders, one-third was to go to the State Registrar, while the other third was to form a "registration fund" in the State treasury, from which the registrar's salary and the expenses

* Nineteenth Biennial Report of the State Board of Health of California, Sacramento, 1906; Twentieth Biennial Report, 1908.

† The successive Biennial Reports of the State Board of Health have been used as the main sources of information.

‡ Governor's Message of January, 1857, Senate Journal, Eighth Session, p. 43.

§ Statutes of 1858, Ch. 356.

of his office were to be paid. No mechanism was provided for the enforcement of the law, and but few reports were received. The registrar was convinced by two years' experience that his venture was not a lucrative one, and in 1860 the law was repealed, in accordance with his own recommendation.*

The State's second registration law came into being under better auspices. Massachusetts had established the first State Board of Health in 1869, and its example was followed by California in 1870.† The statute establishing the California board did not provide for a registration system, but directed the board to "devise some scheme whereby medical and vital statistics of sanitary value may be obtained." Accordingly, a system of voluntary reports was improvised, circulars and blanks being sent to local officials, physicians, hospitals, public institutions, and even to the various lodges of one fraternal order. The results were, of course, unsatisfactory, and the labor involved was disproportionately great. The board also prepared the draft of a registration act and recommended its enactment.

The plan proposed by the board did not become law, for a code commission was at work on the California statutes. A registration system was one of many features which California borrowed at this time from the laws of New York. By the provisions of the new code,‡ which went into effect in 1873, registers of marriages were to be kept by all persons performing marriages; registers of births, by physicians and midwives: of deaths, by physicians; of funerals, inquests, and burials, by clergymen, coroners, and sextons. Reports were to be made quarterly to the County Recorder. This law seems to have been satisfactory to the State Board of Health, but the returns proved to be too inadequate to be worth printing. The fault was

* The First and Second Annual Reports of the State Registrar of California (1858 and 1859) are among the curiosities of statistical literature. On account of its obvious pecuniary purpose the law was severely criticised by the California newspapers of the day. Nevertheless, at the end of the first year the registration fee was doubled, and the appointment of administrators of estates was added to the facts to be recorded. (Statutes of 1859, Ch. 119.)

† Statutes of 1869–70, Ch. 228.

‡ Political Code of California, 1872, Title vii, Ch. 3.

easily imputed to the "ignorance and apathy of the public." Here, as so frequently in American experience, it was not realized that mere legislative *fiat* will accomplish little, unless it is accompanied by an efficient and centralized administrative system. In default of registration statistics the State Board of Health continued to utilize the reports of mortality in certain localities* obtained from voluntary correspondents,—physicians and, in a few cases, local boards of health. Having tried unsuccessfully to get the registration law amended, the Secretary of the State Board of Health showed a pardonable loss of enthusiasm by recommending that the whole administration of the law, together with the clerical work of tabulation, be shifted to the office of the Secretary of State.†

The registration of births was much less complete even than the registration of deaths. In 1880 the experiment was tried in Sacramento of taking a census of births in connection with the annual school census, and in 1881 it was extended to other parts of the State. Although the results were thought at the time to justify a further development of this system, it is, on the whole, fortunate that no more attempts were made to utilize a method so thoroughly discredited by the experience of the federal census and of several States.‡

In the mean while it was seen that the efficient supervision

* These were at first published monthly in the *Pacific Medical and Surgical Journal*, later in bi-monthly and then in monthly circulars issued by the board. The monthly circulars were reprinted in the Biennial Reports from 1878 to 1902. Annual tables, with classification by sex, age, locality, month, and cause of death, were printed in the Biennial Reports up to 1896. For the years 1892–96 registration records are used in the annual tables in place of the local reports. In general, these statistics are altogether too incomplete to be of use to the investigator, although they throw some light on the relative prominence of certain causes of death.

† The Secretary of State, it seems, would have been in a better position to furnish the proper blanks and record books to those expected to keep registers. An amendment to the registration law, however (Amendments to the Codes, 1877–78, Ch. 239), provided for the distribution of blank registers by the Secretary of the State Board of Health. This change was found to bring little improvement in the operation of the law. An attempt to elicit more thorough co-operation on the part of the County Recorders, by fees paid from the county funds, encountered difficulties in the fact that most of the recorders were limited by law to fixed salaries.

‡ Although some such method may be useful as a means of checking the results of a fairly adequate system of registration of births. *Cf.* the description of the Michigan system by W. F. Petrie, in the *Quarterly Publications of the American Statistical Association*, vol. x, p. 508.

of registration and sanitation by a State Board with only advisory powers depended almost entirely upon securing the co-operation of local authorities. Local boards of health, it was thought, might co-operate with the State Board in extending and improving the reports of mortality in different localities, in enforcing the registration laws, and in the general furtherance of public hygiene. Local authorities already had the power to follow the example of San Francisco and Sacramento in establishing boards of health.* It was now made their "duty" to do so.† Although fifteen new boards were at once established, the State Board found many of these inclined to "regard themselves as purely local, forgetting that they are parts of a system." It was found, too, that the establishment of a local board of health did not necessarily mean the establishment of an efficient local registration system. In 1882 the State Board reported that many towns and cities had not established registration systems, while of those that had only six required burial permits.

Bills intended to remedy these and other defects of the sanitary code were presented to the legislature in 1887, when they failed to pass, and again in 1889, when a number of important amendments were secured.‡ Interments were forbidden except on permits issued by authorized persons; county authorities were required to establish boards of health or appoint health officers in unincorporated towns; district attorneys could be called upon to prosecute municipal or county officials for failure to appoint boards of health or health officers; and wilful refusal to comply with the burial permit or registration laws was made a penal offence, punishable by imprisonment or

* Political Code of 1872, Sect. 3061. Local boards of health were established by State law in San Francisco and Sacramento prior to the organization of the State Board (Statutes of 1869–70, Chs. 346, 490). Mortality statistics for San Francisco date from 1865, when the local Board of Supervisors established a Health Office, made burial permits mandatory, and required the registration of deaths. (See Report of the Health Officer of San Francisco, 1866.)

† Statutes of 1877–78, Ch. 35. This statute also required the local boards to report all deaths monthly to the State Board, the duplicate registration system being thus recognized by law.

‡ Statutes of 1899, Chs. 26, 29, 38.

a maximum fine of $1,000. For three successive sessions, bills providing for the payment of fees from the county funds to persons required to keep registers were introduced in the legislature, but for some reason none of these became law.

As an immediate outcome of this legislation the number of local boards of health and health officers rose to over one hundred in 1890, and it appeared that substantial progress was being made toward the development of a fairly adequate registration of deaths. But political changes in 1891 brought about changes in the *personnel* of the State Board of Health. New functions, moreover, had been developed for that body, so that it seems to have battled less strenuously than in earlier years for the cause of vital statistics. At least the enforcement of the law seems to have been left entirely in the hands of local authorities. The operation of the new statutes, however, enabled the board in 1892 to base its "annual tables of deaths," for the first time, on the reports received from the county recorders. The law requiring the registration of births and marriages was virtually inoperative. Mortality returns were received from only about half of the counties in the State, and their publication was wisely discontinued in 1896.*

For over thirty years, then, the California registration system was thoroughly inadequate in principle and in operation. The introduction of new and better laws cannot be credited to any independent development of interest and knowledge within the State: it is to be attributed rather to the well-directed and well-organized efforts of the Division of Vital Statistics of the Bureau of the Census to extend the registration area. California now has a "standard" law† similar in most respects to laws enacted in a number of other States in recent years. "Standard certificates" of deaths (obtained under the burial permit system) are transmitted to the State Registrar through the local registrars of deaths (County Recorders, City Clerks, and Health Officers). Certificates of births and marriages are transmitted

* Save for a perfunctory résumé for the period 1899–1904 in the Eighteenth Biennial Report, p. 24.

† Statutes of 1905, Chs. 110, 119, 346; Statutes of 1907, Ch. 236.

through the County Recorders and the Health Officers of cities organized under "freeholders' charters." Small fees are paid to the local registrars from the public funds.* In the opinion of the State Statistician the reports of deaths and marriages obtained under the new law are fairly complete; but this cannot be said of the registration of births. The Secretary of the State Board of Health is *ex officio* State Registrar, but the law provides for a "Statistician," who has actual charge of the compilation and tabulation of the returns. This office was filled by the appointment of Mr. George D. Leslie, a trained and thoroughly competent statistician.

The new California reports do more than present useful information: they present it in a useful and illuminating way. In this respect they must be ranked among the very best State reports. The tables are accompanied by an adequate explanatory text, in which the more elementary showings of the tables and the inferences that may be made from them are stated with all needed caution. Special emphasis is wisely placed on comparisons and rankings of different localities and regions.

But the real test of reports such as these is, after all, the selection and form of the tables presented. In general, although lack of a sufficient clerical staff enforced rigid economy in this regard, care has been taken to present what most users of such statistics will regard as the more important classifications. The use of tables for the "main and minor geographic divisions" of the State is especially commendable in the case of a State covering so large an area and containing so many distinct physiographic regions as California. It is to be hoped that in future reports the number of general tables can be increased. Marriages ought to be classified by the age of the contracting parties. Births ought to be classified according to the ages of the parents, the duration of marriages, and the number of children previously born of the same mother. This information

* In addition to the officials named, sub-registrars of deaths may be appointed by the County Recorder to receive certificates and issue permits at points remote from the county seat.

is especially desirable in view of the fact that the birth rate is probably lower in California than in any other State.*

In estimating the value of the tabulations of death statistics printed in a State report, it should be remembered that the State report is, or ought to be, part of a national system, including municipal, State, and federal reports. Co-operation between these different branches of our statistical service should not stop with the use of a uniform classification of causes of death. There would be a gain all around if the State reports should show the deaths from each important cause and each class of causes in each "region," county, and city in the respective States, and if the federal reports should develop much farther than at present the classification of deaths by causes and groups of causes in connection with the fundamental facts of sex, age, race, marital condition, rural or urban residence, and occupation. Of course there cannot be an absolute line of division between the work of the two jurisdictions. State registrars should give due attention to the effect of racial differences, for example, while upon the federal office there devolves the duty of making regional comparisons and studies on a broad scale. But the State registration office finds its primary duty (aside from the legal significance of its records) in its relation to the progress of the State and its subdivisions in matters of public hygiene. If this is true, there is thrown upon the federal bureau, as residual claimant, the special duty of contributing to our knowledge of those fundamental social and economic problems upon which mortality statistics throw light. As things now stand, one must sometimes go to the federal reports to ascertain the mortality from a particular disease in a particular locality, and must seek some of the materials upon which important generalizations may be based in the frequently incongruous tables of different State and municipal reports, or, more often, do without them altogether.

*Cf. *Quarterly Publications of the American Statistical Association*, vol. ix, p. 266.

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NOTES.

SECOND DECENNIAL REVISION OF THE INTERNATIONAL CLASSIFICATION OF CAUSES OF DEATH, PARIS, JULY 1–3, 1909.

The classification of causes of death is fundamental in the preparation of uniform and comparable tables of mortality. Many years ago, in the old International Statistical Congress, the attempt was made to formulate a classification of diseases that could be accepted generally throughout the world. For various reasons the effort was not successful, and up to within a comparatively recent period every nation, and in the United States nearly every State and city, had its own peculiar way of compiling statistics of causes of death. No one could be certain, on examining a statistical table of this kind, that the mortality from any disease was fully comparable with the data found in any other report.

The beginning of the solution of this problem may be found in the Proceedings of the International Statistical Institute at Chicago in 1893, when Dr. Jacques Bertillon, as reporter of a special committee of the Institute, submitted the system which has now become recognized throughout the world as the International Classification of Causes of Death. The recommendations of the committee for the adoption of this classification were not generally followed at first, and it seemed probable that the effort would meet the fate of many previous attempts at international uniformity. The turning-point, from which may be dated the ultimate success of this classification, came with its formal adoption by the American Public Health Association at Ottawa in 1898, this action covering recommendations for its practical use in the national, state, provincial, and city reports of the United States, Canada, and Mexico. The report of the committee of the association which recommended this action, and of which Dr. Cressy L. Wilbur, now Chief Statistician of the Census, was chairman, also suggested a revision of the classification then known as the Bertillon System, so that it would be in acceptable form for the census of 1900 and subsequent years, and provided also for a regular decennial revision, in order that the classification might be kept abreast of the progress of medical science.

These recommendations were approved by the International Statistical Institute. It may be noted, incidentally, that, according to a compilation of all of the recommendations made by the International Statistical

Institute since its foundation, the action relative to the International Classification has been the most completely and successfully carried out in practical statistics. The French government called the First International Commission at Paris in 1900, and the International Classification as revised by it has been used by the United States Census Office, all registration States, and nearly all registration cities in this country, since that date. Unfortunately, however, the registration officials and medical men who had contributed so largely to the adoption of the International Classification were not represented in the First Commission of Revision, and, as a result, some cities have failed to adopt the system and many offices have made modifications which have interfered more or less with perfect comparability.

In order to avoid this unfortunate condition and to secure full representation of the important interests practically engaged in the compilation and study of statistics of causes of death, it was planned early by the Bureau of the Census to include representatives of the organized registration officials of the United States and of the medical profession, whose co-operation in the reporting of causes of death is absolutely necessary for successful results. It is very gratifying, therefore, that Congress provided that the Director of the Census should appoint three commissioners to represent the United States in the Second Decennial Revision called by the government of France to meet at Paris, July 1 to 3, 1909, one to be chosen from the Census Office, one from the medical profession, and one from the organized registration officials of the United States. In accordance with this law, Hon. E. Dana Durand, Director of the Census, designated Dr. Cressy L. Wilbur, Chief Statistician for Vital Statistics of the Census Office, Dr. Frank P. Foster, chairman of the Committee on Nomenclature and Classification of Diseases of the American Medical Association, and Dr. Wilmer R. Batt, chairman of the Committee on Classification of Causes of Death of the Section on Vital Statistics of the American Public Health Association, as the Census Commission. At the last moment Dr. Foster was unable to sail, but Drs. Wilbur and Batt proceeded to Paris, and there were also present as official delegates of the United States Dr. Frank L. Pleadwell, surgeon United States Navy, Dr. H. D. Geddings, assistant surgeon-general United States Public Health and Marine-Hospital Service, Professor Walter F. Willcox, Cornell University, and Dr. William H. Guilfoy, registrar of records, city of Greater New York.

The meetings of the commission were held in the Ministry of the Interior, delegates from twenty-three countries being in attendance. A large amount of preliminary work had been done in other countries, as well as in the United States,* in the preparation and submission of suggestions which were printed for the use of the International Commission,

* See Mortality Statistics, 1907, p. 16.

constituting a pamphlet of 130 pages.* The meetings were harmonious, and a commendable spirit was manifested by those in attendance in the matter of subordinating the individual preferences of each country to the general good. It was recognized that international uniformity could be attained in this way only. A considerable number of American recommendations were approved, notably that providing for a rearrangement of deaths from violent causes, which will aid greatly in the proper presentation of the statistics of this important class of deaths.

The detailed results of the revision will be printed (*Procès verbaux*), and the revised version will be available, therefore, for the use of the United States Census, and all State and city registration officials, beginning with the year 1910. The opportunity of thus starting out with the mortality statistics relating to the actual census year, which affords the data of population with which the mortality statistics must be compared, is of the greatest value, and it is highly gratifying that the wishes of the United States for the advancement of the date of the International Revision from 1910 to 1909 were acceded to by the French government and the other countries participating.

In accordance with a resolution of the International Commission an official version of the titles is to be prepared in each language represented. The English translation is to be prepared by Dr. Wilbur, aided by the other American delegates and Hon. G. W. Knibbs, Commonwealth Statistician of Australia. This will provide precisely the same tabular list for all English-speaking countries that have adopted the International Classification.

The active interest of the United States in the promotion of international uniformity was accorded a very graceful recognition in the bestowing of the vice-presidency of the International Commission upon Dr. Wilbur, who was called upon to preside over one of the sessions.

The sessions closed on July 3, and on July 4 the delegates were received by the President of France and Mme. Fallières. They also participated in the sessions of the International Statistical Institute, which were held in the week following those of the Commission of Revision.

The next revision will be called in 1919 and under the auspices of the French government, unless other provision is made. It is to be hoped, however, in view of the great advancement of American vital statistics and the important part that this country has played in the extension of the International Classification, that the Third Decennial Revision will be called by the American government to meet at Washington.

C. W. D.

* Exposé sommaire des observations présentées par diverses autorités statistiques à la Commission Internationale chargée de la révision décennale de la Nomenclature Internationale des Maladies. Deuxième session, 1909.

THE NEED OF STATISTICS OF AREA IN THE UNITED STATES.

The writer recently undertook a simple statistical study of population density in the rural districts of the State of Ohio. He was very much surprised to find that, while population figures for townships and "incorporated places" were, of course, available in the United States Census Reports, there were nowhere in the State any official statistics of the areas of these local units. Even in Cuyahoga County, which contains the metropolis of the State, the county surveyor had only recently obtained the data of township areas. He had done this by measuring with a planimeter the surveyed maps of the county. Taking a hint from this method, the writer got his own data for the larger part of the State by measuring on a map and reducing to square miles those townships rectangular enough to admit of it. Of course, the results were crude, the measurements being inaccurate beyond a quarter-mile.

Becoming interested in knowing in how many States of the Union this lack of data existed, he sent a letter to each of the forty-eight secretaries of state, asking whether "there was any compilation, printed or unprinted, of (*a*) figures giving the total area of each township in the state (or of other similar division smaller than a county) (*b*) figures giving the area of each town and city."

To these forty-eight letters thirty-nine replies were received. One State, Rhode Island, sent the figures desired, which covered, of course, a rather small proportion of the whole country's area. The answer of the other thirty-eight was that they knew of no such compilation, official or unofficial. In about twenty-cases the question was referred to some other department of the State government or to some Federal Bureau.

One State surveyor said that he had long had such a work in mind, and hoped soon to get at it. Iowa offered to compile the data for thirty-five dollars. In three cases the writer was referred to the United States Department of the Interior, whose lack had already been revealed when Ohio was investigated.

Professor Walter F. Willcox, of Cornell University, has gathered these data for New York State by the planimeter and map method mentioned above. But, as he did this as a purely private enterprise, it has not been included in this account of the status of public statistics of the subject.

This reveals again our woful lack in the United States of many of the most easily obtained and most elementary social statistics. It is exceedingly important, especially since we are coming rapidly to the end of our great free lands, that we should know more and more about the

quantitative relation of the population, particularly of the rural population, to the soil.

The United States Census, it is true, takes up the question of population density, but in a rather general, extensive way. Any intensive study is impossible to one not having access to the complete data of the Census Bureau. If, however, we had the area of every township, parish, hamlet, village, town, and city, it would be easy for any statistician to take up this problem. The only reason for choosing these subdivisions (township, etc.) is that they are the "enumeration units" of the Federal Census.

The purpose, then, of this brief article is to suggest to those interested in statistical studies the need of this particular kind of data, and to urge that a concerted effort be made to have these figures of area obtained by the Thirteenth Census. It would not be an expensive item for the census, though decidedly too expensive for private enterprise.

C. E. GEHLKE.